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ABSTRACT

The paper addresses the history and current status of educational provisions for autistic students, discusses the requirements for effective education for this population, and analyzes the implications for teacher education practices. A status report cites lack of structure in programs, non-functional and age-inappropriate curricula, largely segregated facilities, and inadequate instructional time. The history of autism research and education in the United States is described. Critical dimensions of educational programs are examined in terms of instructional setting, instructional environment, instructional technology, use of applied behavior analysis, alternatives to the use of punishment, naturally occurring cues and prompts, and repeated practice. It is urged that instruction be functional and curricula organized according to domains other than discrete content areas. The importance of non-segregated environments is emphasized. Eleven competencies for teacners of autistic students are identified, and questions of inservice and preservice settings and instructional content in teacher preparation programs are addressed. (CL)

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AN EDUCATIONAL PERSPECTIVE OF AUTISM: IMPLICATIONS FOR CURRICULUM DEVELOPMENT AND PERSONNEL DEVELOPMENT *

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Until the passage of PL 94-142, very few students with autism were afforded an education. Most were excluded from public schools and were able to receive an education only if they happened to live near one of a handful of private programs or could prevail on public school officials to "fudge" on the diagnosis and accept them under another label (Donnellan-Walsh, 1976). Teacher training institutions did not usually address the educational implications of autism, as their future teachers would be unlikely to encounter youngsters with autism in their classrooms.

Since the enactment of federal and state mandates, the situation has changed. These same youngsters are entitled to a free, appropriate education, at public expense, in the environment least restrictive of their personal liberties. That which had been a "charity" is now a civil right under PL 93-312 (Section 504) and the Fourteenth Amendment (Martin, 1979). With several years' experience, it seems appropriate to ask some questions about the implementation of the legislation, its impact on the students, and the adjustments the educational community has made in terms of program development, service delivery, and personnel preparation to meet the needs of this particular group of learners. A good first step is to look at the quality of educational programs now being offered these students and to judge whether they are, in fact, appropriate and provided in the least restrictive manner.

Observations of classrooms in dozens of states and provinces, interactions with hundreds of teachers and administrators, and consultation with many colleagues leads to the unfortunate conclusion that educators and parents ought to have serious concerns about how these students are being taught, what they are being taught, and where, with whom, and when they are receiving instruction. Concerned parents and professionals should also ask the important question, "What can we do about it?"

QUESTIONS RELATED TO INDIVIDUAL EDUCATIONAL PROGRAMS

How Are These Students Being Taught?

The questions related to technology are perhaps the easiest to address, although the answers are often disappointing. Fortunately, technologies for facilitating the educational progress of these students do exist (e.g., Lovaas, 1977; Koegel, Russo, & Rincover, 1977), and many are being used in school programs.

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Despite the overwhelming evidence that a highly structured, data-based empirical approach is necessary, far too many school programs are still weak, poorly articulated, and based on nebulous notions of psychoeducational, developmental, or analytic therapy. Less often now, we are hearing comments such as, "We consider autism a mental illness, so in our program the classroom is 'time-out' from school" (from a public school administrator in Missouri in 1977). However, we continue to hear such comments as, "I try not to impose myself on the child; I let her choose the activities she prefers" (from a public school teacher in Wisconsin in 1980), or "He knows how to behave, and so we have decided not to work with him until he decides to stop self-stimulating" (from a public school administrator in Alaska in 1979).

Even in classrooms which use behavioral approaches, the methods of educating students with autism too often attempt to replicate the laboratory settings in which the technology was developed. There is over-dependence on one-to-one instructional arrangements in small clinic-like cubicles.

Finally, both structured (behavioral) and unstructured (psychoanalytical) programs are often based on an inadequate knowledge of interventions necessary to deal with many of the severe behavior problems sometimes presented. Procedures used to manage inappropriate behaviors are too often negative (e.g., the use of time-out boxes), used without seeming awareness of the legal or ethical issues involved (Martin, 1979; Donnellan-Walsh, 1976), and implemented without a careful consideration of non-punitive alternative strategies (LaVigna & Donnellan-Walsh, 1976).

What Are These Students Being Taught?

Instructional activities in many classes for students with autism are irrelevant, artificial, age-inappropriate, non-functional, and based on curricula which may or may not be suited to the developmental needs of normal pre-schoolers. The following example (from the author's experience) is all too typical:

> Recently a seven year old boy with the problem of autism was observed during his fifteen-minute "cognitive" and "language" sessions in a one-to-one arrangement. The child is quite well behaved but essentially mute and displays few functional skills. The cognitive development activities included touching the biggest of three purple bugs on a di to sheet and sorting yellow felt squares from red felt ap les. During the language session he was asked to label or to imitate the label of various objects (including a yellow plastic bunny, a toy airplane, a plastic fork, a bottle of glue and a toy radio) and pictures including a camera, rock, fish, cloud, coyote, wolf, a man sweeping,

a boy kicking, a girl cutting, a girl opening and a boy feeding. When the speech and language specialist was asked why these items were chosen she responded: "It was arbitrary; we just wanted him to learn to imitate."

The child's parents objected to his program whereupon school district officials brought a well-known consultant from another state. The consultant proclaimed the speech and language specialist "one of the best I have ever seen." In addition, she then assisted the staff in developing a new individualized educational plan (IEP) for the child without consulting the parents. The IEP included the objectives and goals found in Table 1 along with six other disconnected objectives (e.g., tracing letters of the alphabet). Subsequently, school district personnel and the consultant seemed surprised that the IEP was challenged by the parents.

Where And With Whom Are These Students Being Taught?

It is not infrequent for students with autism to be transported long distances in order to attend a homogeneous "autistic" classroom in a segregated, handicapped-only facility. Such arrangements preclude programming which involves non-handicapped peers and others. The students are seldom given the opportunity to generalize the skills they learn in school to other environments, and are rarely taught the skills necessary to survive independently or semi-independently in non-school environments.

When Are These Students Being Taught?

Classroom schedules often provide good indications of how staff prioritize the skills their students need to learn. Recently, a major educational agency published guidelines for school districts which would be developing classrooms for students with autism. The suggested schedule for classrooms which would serve these students is presented in Table 2. (Since this publication has been recalled, the citation has been omitted). Following such a schedule, it seems assured that, after 11,340 hours of educational opportunity over 12 years of schooling, the students would realize 1,800 hours of bathroom; 2,340 hours of snack, choices, circles, and goodbye's; 2,880 hours of playground; and assuming that "centers" equals "instruction," 2,520 hours or 2-2/3 years of instruction. Unfortunately, approximations of such a schedule can be found in too many classrooms for students with autism and other severely handicapping conditions.

AN HISTORICAL OVERVIEW

If the examples presented above were unique or isolated instances, they could be dismissed as tragic aberrations of the educational system. Rather than being exceptions, these samples

are unfortunately representative. It is critical that educators ask why. Why are available technologies not being applied appropriately in a wider variety of settings? Why are curricula so artificial and nonfunctional? Why is it that students with autism often attend no regular school campuses nor enjoy systematic interactions with non-handicapped peers? Why is programming for severely handicapped students often so unrelated to vital life functioning? An examination of the history of public education in America and the history of research in the field of autism itself provides some insight into current educational shortcomings.

The Nature Of The Public Education Model In The United States

Recent legislation governing the education of handicapped children has imposed a myriad of new requirements on the public educational system. Such requirements include, for example, individual assessment followed by placement according to an individual educational plan which is to reflect the unique needs of each child, as determined at least by parents, teachers, administrators, and the child, if appropriate. Contrary to these demands, the implicit and explicit direction of our public school system since the beginning of this century has been toward a model that fits the "myth of the melting pot" and that leaves all educational decision-making in the hands of the professionals. Real individualization and lay input into decision-making have been alien to the system (Iannoccone, 1979). Setting objectives and choosing activities thus become a pro forma exercise to fit into the already determined classroom schedule. The system continues to behave in ways most familiar to it, with little understanding of the real intent of recent legislation: namely, to consider unique needs for each student.

Fortunately, many professionals are attempting to change the public educational model into one which is more responsive to the needs of individual learners. In the case of students with autism, however, educators often fall short because so little information has been available to them regarding the needs of these students and the characteristics of effective educational services. This has been due, at least in part, to the historical distance between autism research and the ongoing educational community.

Autism Research And Educational Services

In the past, when educators rejected persons with autism, the information and service void was filled by persons outside of education, particularly mental health workers and psychologists. As educators attempt to accommodate the needs of autistic students, there is little in their own profession in terms of direction, experience, curriculum strategies, or service delivery models to assist them. With the exception of a few fine books that address some of the learning needs of these students (e.g., Wing, 1974; Lettick, 1974), teachers and others

must look to the research literature in behavioral psychology. School personnel who are attempting to assess the long-term educational needs of these students often find only medical, psychiatric, and psychometric research. Because of the episodic rather than longitudinal nature of this research, educators are likely to find little with direct application to the public school classroom.

Nature of research in autism. A review of the existing research literature in the field of autism reveals no data on longitudinal, comprehensive instructional approaches that could enable students to develop the skills actually needed to live, work, and play in complex and heterogeneous community environments. This is not to detract from the value of the research in the field. Tremendous progress has been made in twenty years and much of it is a direct result of that research. However, the approach to the solution of educational systems problems for autistic and other severely handicapped students has been limited. Typically, researchers in autism have focused on basic research questions. While such research may ultimately benefit large numbers of children in the future, it rarely provides direct assistance to the instructional and organizational problems facing a classroom teacher. A research may focus on a methodology to teach X without ever questioning or justifying the students' need to do or to know X. While a tension between basic and applied research is common in many fields, it is particularly so in autism, since most of the available educational services literature in the field has been generated by researchers.

Many contributions of researchers in the field of autism were made by people vitally interested in the diagnosis of, causes, and cures for the syndrome (e.g., Ornitz & Ritvo, 1968; Rimland, 1964; Rutter, 1968; Rutter, 1978; Schopler, 1978). Such lines of research were valuable in the past if only because they provided more parsimonious and plausible explanations than were generally offered by mental health personnel and psychoanalysts in particular (e.g., Bettelheim, 1967). Such research continues to be extremely valuable because of the critical need to find the biological basis of the syndrome, but is often less than relevant to the comprehensive educational needs of students with autism.

Perhaps, understandably, much of medical and psychiatric literature is concerned with finding a cure for autism. Even in the area of behavioral psychology, which has made outstanding contributions to the education of these students, the emphasis has been more on "curing" or "ameliorating" certain problems than on the design and implementation of long-term instructional services. The primary concerns of many behavioral psychologists have been oriented toward greater definitional precision and understanding of various facets of learning styles and characteristics, and the elimination of high-rate, socially unacceptable actions (e.g., Metz, 1965; Lovaas, Litrownik, & Mann, 1971;

Koegel & Schreibman, 1977). Psychological literature, therefore, is replete with demonstrations that some "subjects" with autism can learn isolated skills under circumscribed conditions. Similarly, there is much written about the deceleration of unacceptable behaviors. Given the saliency of many of these behaviors in terms of rate, durability, the physical danger they present to the child and others, and the interference with opportunities to develop other skills, it is certainly understandable why many professionals focus upon these characteristics. The literature demonstrating that autistic self-stimulatory and self-mutilating behaviors could be replaced with other less deviant actions, as well as research which looks at learning problems correlated with autism, offer tremendous contributions to the education of autistic students. Nevertheless, this literature is limited and, while it must continue, it should no longer confine or define behavioral research in the field of autism. Guess, Horner, Utley, Holvost, Maxon, Tucker, and Warren (1978) contend that, while the present technology of teaching severely handicapped students is far from complete, our current understanding of "how" to teach seems more advanced than our knowledge of "what" skills to teach and the sequence of teaching these skills.

Confronted with problems of the magnitude associated with autism, it is understandable that many researchers did not relate to questions of what skills were being taught, the rationale for their selection, or the characteristics of instructional location or delivery. Consequently, these issues have often been ignored by conscientious teachers and others who, upon reading the behavioral literature, struggle to replicate research strategies, content, and measurement systems in the classroom without regard to the longitudinal needs of any given student. Too often educators have been unable to generalize from the research which demonstrates effective techniques (albeit with irrelevant content) to the utilization of those techniques in more educationally meaningful ways. Thus, there is often no theme or educational "gestalt" to programs provided for individuals with autism. Rather, the educational services often consist of disjointed, functionally irrelevent "behavioral targets."

THE NEED FOR NEW STRATEGIES IN DEVELOPING PROGRAMS FOR STUDENTS WITH AUTISM

It is time to begin to address broader issues regarding the education of students with autism and to begin to identify other informational needs to the scientific community. Educational services for these and other severely handicapped students must be based upon more than presently available research. Again, this is not to diminish the value of the research that has been done to date. In many cases, to replicate the materials, teaching strategies, tasks, and objectives used by the researcher is counterproductive to the educational needs of the children served. While there is certainly the technology to teach a

child to identify a cup, draw a triangle, count backward, and discriminate blue from purple (Koegel, Glahn, & Nieminen, 1978), the telling question for the educator is: "So what?". So what if Johnny can touch three sequenced red, white, and blue blocks--if he cannot tell his mother what he wants for supper, cannot act appropriately on a public bus, and cannot play a simple game with peers or siblings?

Available research provides convincing evidence that:

1. Students with autism can learn many skills (Lovaas, 1977);

2. Students with autism can be taught to perform in response to cues from a wide variety of persons (Koegel, Russo, & Rincover, 1977);

3. Students with autism have poor generalization skills and must be taught in a variety of settings to ensure that desired skills will be performed in those settings (Koegel, Glahn, & Nieminen, 1979);

4. It is possible to teach a wide variety of personnel to deal with persons with autism, thus providing students with autism access to a greater variety of living and learning environments (Donnellan, LaVigna, Schuler, & Woodward, 1979);

5. It is relatively easy to attract large numbers of people to work with these students (Warren, 1980);

6. Autistic and other severely handicapped students can be taught age-appropriate and functional skills in natural environments (Goetz, Schuler, & Sailor, 1979).

On the other hand, data also show that 95 percent of adults with autism live their lives in the back wards of large multipurpose and dehumanizing institutions (Sullivan, 1977). The socio-political implications of why and how our nation has chosen an institutional mode as the primary domestic environment for so many handicapped people is discussed elsewhere (Wolfsenberger, 1972) and is beyond the scope of this paper. Instead, it is the purpose of this paper to address the issues of what educators can do to change the outcome for these students. Lotter (1974), in his Middlesex follow-up study, said that he was unable to find any noticeable effect of educational intervention on the subjects of that study. Yet, we as educators are convinced that education can make a difference (Fenichel, 1974). It is the purpose of this paper to identify some of the dimensions that must be addressed if educators are to begin to provide longitudinal and comprehensive educational services that are systematically and functionally relevant to the enhancement of the ultimate life space and functioning and, therefore, the quality of life of all persons with autism.

Tomorrow morning a child will be identified as having the problem of autism. The challenge to the educator is to ensure that this child does not end up 15 years from now in the same depersonalized and dehumanizing institutional environment as his or her categorical predecessors. The remainder of this paper will delineate some of those critical dimensions of services to students with autism.

CRITICAL EDUCATIONAL DIMENSIONS OF ACCEPTABLE EDUCATIONAL SERVICES

Since the majority of children with autism currently grow up to be adults who live in institutions, one criterion of educational change would be a significant increase in the number of students with autism who are able to participate successfully in a variety of community-based environments as adults. Brown, Nietupski, and Hamre-Nietupski (1976) referred to such a goal as the "criterion of ultimate functioning," a dynamic and fluid, yet specified and personalized, set of attributes that each person must have in order to function at maximum potential in adult community environments that are socially, vocationally, and domestically integrated. Obviously, a number of dimensions can contribute to success in effecting competent community performance by adults with severe handicapping conditions.

How And Where Students Are Taught

Instructional setting. Most programs for students with autism operate on the assumption that the classroom setting is the best place to teach most skills and that excursions beyond the classroom are "field trips" designed to "expose students to other experiences." This assumption neglects to take into account the significant generalization problems demonstrated by autistic and other severely handicapped students as shown in the chapter by Carr (1980). Koegel, Egel, and Dunlap (1979), in commenting on the experience of mainstreaming students with autism, note that one of the principal advantages of placing such students in environments containing non-handicapped students is that it enables educators to discern the wide range of important skills these students need yet to learn. They maintain that this practice may be a moral obligation, inasmuch as it helps to showcase the most productive target behaviors for their successful development, in addition to revealing the potential that many of them have for functioning successfully in the regular classroom.

Since it is obvious that none of these students will spend his or her adult life in a classroom, it is necessary to develop curricula that relate to teaching functional skills in at least such areas or domains as community functioning, domestic living, recreation/leisure, vocational functioning, and social interactions with non-handicapped peers. To implement meaningful programming in these areas, a significant portion of the educational experience ought to take place in the varied school and

non-school environments in which they will ultimately live, work, and recreate. It is strongly urged that the notion of an "instructional setting" be expanded to include direct, systematic, longitudinal, and comprehensive instruction in a variety of non-classroom and non-school environments. The older the student becomes, the less time they should spend on school grounds and the more time they should spend in shopping centers, buses, and bowling alleys, not as passive recipients of a field trip experience but as learners who are gaining the skills needed to function in those environments. If, as Dunlap, Koegel, and Egel (1979) suggest, there is an obligation to assist students with autism in learning to adapt to normal classrooms, then there certainly must be an obligation to assist them in dealing with the natural environments in which they will ultimately be required to function.

Instructional arrangements. The extraordinary behavior and learning problems of students with autism usually require that classrooms have low teacher-student ratios. Unfortunately, many persons have interpreted this to mean that the ideal for these students is a one-to-one interaction with a teacher throughout the day. While there is no doubt that this kind of individualization will be required to teach some skills to some students under certain circumstances, educators must also be aware of the need to teach the students the skills necessary to interact with persons other than instructional personnel and to function effectively within groups. A good educational environment should contain a wide variety of instructional options, including one-to-one individualized instruction within small groups, student-to-student arrangements, and peer model-to-student arrangements (Donnellan, Falvey, Pumpian, Baumgart, Schroeder, & Brown, 1980).

Instructional technology. The learning and behavior problems presented by students with autism have contributed to the development, application, and refinement of some relatively precise technologies which can be used to enhance the probability that a given student will acquire the skills that he or she needs to learn. The discrete trial format (Koegel, Russo, & Rincover, 1977), from the field of applied behavior analysis, is a good example. It has been demonstrated that such technology can be taught to a variety of professionals and non-professionals (Koegel, Russo, & Rincover, 1977; Donnellan-Walsh & Schuler, 1977; Donnellan, LaVigna, Schuler, & Woodward, 1979). However, this technology is associated with several potential limitations when referenced against the criterion of ultimate functioning. The very precision of the technology, the specification of stimulus cues, may preclude the student from responding with similar behavior in less precisely delineated environments. Vincent, Salisbury, Walter, Brown, Gruenewald, and Powers (in press) comment on this concern relative to the transition of young handicapped children from early childhood special education into regular education. According to these authors, while technology may clearly produce positive changes in children's

performance, the literature shows that changes displayed under specific learning conditions do not easily generalize to other, more natural environments (Stokes & Baer, 1977). Thus, children may be learning to produce a behavior only in relation to highly specific antecedent and consequent conditions that do not exist in other environments. There is no doubt that highly specialized technology is necessary; it is its application and direction that should be questioned, inasmuch as the focus of special education should be to remove the technology while continuing to maintain the child's response.

One solution to this problem is to teach the technology to a wider variety of people in the child's natural environment (Koegel, et. al., 1980). While this may in fact be a valid strategy for teaching a specific student a specific skill, it may not always be feasible. Educators are responsible for large numbers of students whose parents, siblings, and friends may not have the resources, inclination, skills, nor time to participate in such training. Obviously educational efforts cannot be confined to those children whose parents and others are cooperative. The solution is not to ignore the technology and all the benefits it has achieved, but rather to adapt the technology to more natural, less artificial learning and living environments.

Applied behavioral analysis in natural settings. Many educators encourage and support applied behavioral research in natural settings (Neff, Iwata, & Page, 1978; Yeaton & Bailey, 1978). Unfortunately, such research is not prevalent in the area of autism, where most research comes from clinical or institutional settings or from simulated classroom models (Dunlap, Koegel, & Egel, 1979). Such environments do not take into account the multiple agendas that operate on a typical public school class. There are multiple public and private levels of operation, including such matters as processing subject matter information, judging student abilities, managing classroom groups, coping with emotional responses to events and behaviors, establishing procedures for routing and special assignments, distributing resources and supplies, keeping records, interacting with colleagues and administrators, and many other tasks. In special education, the "many other tasks" include activities not typically found in regular education (training aides, meeting with ancillary staff, evaluating IEP's, having conferences with parents, and so on). In real schools, difficult children cannot be assigned to a spare graduate student nor sent back to the ward as often occurs in research classrooms. The typical special education classroom, however, is itself artificial compared to natural non-classroom environments. Field research in a wide variety of natural settings would facilitate identification of the behavioral strategies necessary to better assist teachers in working with autistic students. Many of the strategies are already well documented but are not typically known by teachers of autistic students. For example, teachers of autistic and other severely handicapped students must broaden the measurement strategies at their disposal. Trial-by-trial or

event-data collection may be feasible and appropriate for teaching "table tasks" in one-to-one or small group arrangements. However, strategies must be developed to monitor student performance on more complex tasks in less controlled settings. While a student may correctly board the front of the public bus on five consecutive trials, he may do it so slowly that it is unacceptable to the general public. Teachers must be sensitive to monitoring all socially important dimensions of student behavior.

Alternatives to the use of punishment. Just as it is critical that a teaching technology be developed that can be used to teach functional skills in natural environments, it is critical to develop a technology that can be used to prevent, reduce, and eliminate a variety of aberrant behaviors in classrooms and in other settings. Irrespective of the legal and ethical issues involved (Martin, 1979; LaVigna & Donnellan-Walsh, 1976; LaVigna, 1980), more and more public schools are reluctant to allow the use of aversive stimulation or exclusion in the form of "time-out" to reduce serious social/behavior problems. Even if the schools allow aversive techniques, the use of such procedures may restrict the student to the school environment because many successful aversive interventions are not appropriate in bowling alleys and other public places. The result, therefore, may be that students with autism may not learn to behave appropriately in a variety of settings. A concerted effort must be made to find applications of the technology which are feasible and acceptable in a wide variety of settings.

Naturally occurring cues and prompts. Applied research in natural environments would facilitate the development of strategies to help autistic and other severely handicapped students to respond to naturally occurring stimuli and prompts (Donnellan, et. al., 1980; Falvey, et. al., 1980). While the literature typically tells teachers to "fade out prompts," there are no clear directions how to "fade in" those prompts on cues which are available to non-handicapped students. If teachers are to train their students to shop in supermarkets, then teachers need to know how to inventory such environments for naturally occurring cues, such as the actions or words of the cashier which signal that he is finished adding the bill and wants the money. Students who are being taught to swim at the local YMCA can be taught to respond to the cue that empty lockers are the ones without locks on them or that the swimming instructor blows the whistle when it is time to go into and out of the pool. Potential research questions related to generalization, stimulus overselectivity, and other learning characteristics are endless.

Repeated practice. Many teachers have been encouraged to teach to criteria in the context of massed trial or repeated practice formats. That is, teachers often feel the need or are encouraged from reading research literature to provide relatively large numbers of teaching trials in relatively short periods of time. However, it is an empirical question whether, for some kinds of learning, repeated practice strategies implemented in

artificial settings might not actually impede the acquisition of concepts and operations. In other words, it is possible that teaching the appropriate label for "cup" by arranging ten opportunities to respond to questions such as "What is this?" and "What do we need to drink?" and to interact with cups by taking them out of the dishwasher, stacking them, drinking from them, and so on, might ultimately be preferable to ten or twenty two-choice discrimination trials where students are asked to "Show me cup?". A clear danger of the widespread use of repeated practice strategies is that teachers may limit their curriculum to those activities that readily lead themselves to massed trials, further encouraging the use of artificial tasks, materials, and settings. We do not wish to encourage more loosely structured instruction, but to teach teachers to systematically arrange for more naturally occurring learning situations.

Strategies For Deciding "What" To Teach Students With Autism

Rationale behind current curriculum development strategies. The activities presented in the typical classroom for children with autism are often irrelevant, non-functional and based on notions of curricular content which are best suited to normal pre-schoolers. Even if one ignores the weak and unstructured classrooms which seem to view these students as "emotionally disturbed" and look only to those which strive to more appropriately program for these children, one is still struck by the seeming irrationality of the choice of activities. This artificiality is so pervasive that it would seem to reflect some underlying notions or logic about curriculum development.

Guess and his colleagues (Guess, Horner, Utley, Holvoet, Maxon, Tucker, & Warren, 1978) have identified two kinds of logic. The first is developmental logic which follows cognitive theories of learning in assuming that the education of severely handicapped children should follow the sequence in which normal children learn. The second, remedial logic, advances the assumption that severely handicapped children are not the same in their abilities and deficits as normal children, and that their education should concentrate on identifying the skills and skill sequences that will improve the child's ability to interact successfully with his environment. Remedial logic also emphasizes the success of past efforts through which severely handicapped children learned difficult skills, and places little emphasis on their "readiness" to master each element.

Guess et. al., (1978) characterize developmental logic in terms of horizontal program sequencing, and remedial logic in terms of vertical program sequencing. Both approaches have strengths and weaknesses. According to the authors, developmental logic tends to focus too heavily on developmental states, and this, in turn, implies maturational determinants of behavioral acquisition and undue emphasis on readiness skills. The dependency of this approach on characteristics of the child makes it quite possible to rationalize failure as due to these characteristics, rather than to a failure of the curriculum or

the teaching procedures. On the other hand, the vertical sequencing of remedial logic can lead the educator to assume that almost any behavior can be taught once it has been objectively identified, task analyzed, and flow charted. When this kind of over-confidence in our current technology fails to produce change in a child, its proponents may revert to a perceived need to teach more basic "prerequisite" skills, a response that corresponds to the emphasis on readiness skills proposed by the developmental approach. However, vertical sequencing does combine the technology for teaching with the optimism that skills <u>can</u> be taught.

Strict adherence to either approach presents particular difficulties to students with autism, whose learning difficulties include developmental discontinuity, unusual rule learning skills (Hermalin, 1971), stimulus over-selectivity, and generalization problems (Carr, 1980). Students with autism and other severely handicapping conditions need a curriculum that is functional rather than artificial, integrated rather than isolated, longitudinal rather than episodic, and that has minimal reliance on instructional inference (Donnellan, Flavey, Pumpian, Baumgart, Schroeder, & Brown, 1980).

Of course, any activity can be seen to have potential functional value, particularly if one relies on a "readiness" model. In the earlier example where a child was assigned the additional IEP goal, "to trace all of the letters of the alphabet," school officials argued that this would "make him ready for the normal classroom." Given the disparity between his skills and the comprehensive demands of a regular classroom placement, it is highly unlikely that mastery of this skill alone would have supported placement in the regular classroom.

In deciding whether to target a particular skill for training, teachers and parents should ask, "If this child does not learn to perform this skill, will someone have to do it for him?" For example, "If he does not learn to put together one more five-piece formboard, will someone have to do these things for him?". Probably not. However, if he does not learn to cut the food on his plate, put the coin in the vending machine, or put on his shirts, someone will have to do these things for him. Of course, not every activity can be judged by this definition; there are single-person leisure time activities such as playing solitaire or listening to music which are probably better judged by other standards such as "normalization" (Wolfensberger, 1972). The definition is, however, a simple and efficient way of judging relative functionality, particularly as students enter adolescence and young adulthood.

<u>Organizing curricular content</u>. In addition to a greater emphasis on functionality in curricula for students with autism, alternatives to the popular approach of categorizing curricula into discrete content areas, such as gross motor, self-help, and language, must be developed. These areas are not, in fact,

discrete, and such categorization often leads teachers to think about a student's day in a disjointed and fragmented manner. This fragmentation places the burden of synthesizing the various daily activities on the student whose acquisition and performance problems are often defined by the absence of or by deficiencies in the ability to synthesize information from a variety of sources.

One alternative strategy for generating and organizing educational curricula for severely handicapped students is the ecological inventory strategy described by Brown, Branston, Hamre-Nietupski, Pumpian, Certo, and Gruenewald (1979). This approach is particularly appropriate for meeting the unique needs of students with autism and the reader is referred to their work for an in-depth presentation of the strategy. Briefly, they suggest the following steps:

1. Divide the curriculum into the most relevant curricular domains;

2. For each domain, identify the environments in which a severely handicapped student is functioning or might function in the future;

3. Divide the environments delineated in each domain into subenvironments;

4. Delineate the activities that occur in each sub-environment; and

5. Delineate the specific skills needed in order for severely handicapped students to participate in as many of the activities as possible.

Rather than working with traditional developmental curriculum domains, Brown, Falvey, Vincent, Kaye, Johnson, Ferrara-Parrish and Gruenewald (1979) suggest domestic, vocational, recreational/leisure, community functioning, and interaction with non-handicapped persons as non-mutually exclusive curriculum domains and recommend that each be represented in the IEP of each student. Within each domain, the current and subsequent environments which are presently available or could be potentially available to the student should be studied in detail. This ecological inventory of current and subsequent environments would include at least the following steps:

1. Conduct a non-handicapped person inventory including analysis of skills used by the non-handicapped to function in a particular environment;

2. Conduct a severely handicapped person inventory including a determination of the precise skills necessary for a given severely handicapped student to participate in the activities which take place in that environment; and

3. Conduct a discrepancy analysis comparing the skills manifested by the non-handicapped and the present skill level of the handicapped student.

The information generated by this kind of analysis would provide critical information concerning the skills on which the student needs instruction in order to participate in appropriate activities. It is this kind of information which would form the basis of the student's IEP goals and which would reflect present as well as long-term needs. This approach seems particularly appropriate for students with autism for several reasons:

1. Parents of children with autism often report that one of their greatest concerns is that their children have nothing to do when they have free time (LaVigna & King, 1975);

2. Public community functioning activities are particularly appropriate for students with autism because of their insistence of the preservation of sameness (Kanner, 1943) and their need to function in the terribly inconsistent "real world";

3. Children with autism are such rote and ritualistic performers that an emphasis on subsequent environments is necessary if alternative environments will ever be open to them.

The use of alternative approaches to curriculum development such as the "ecological inventory strategy" to assist in the development of individualized curricula will force us to re-examine our notions about instructional environments and settings in ways which will better accommodate to the generalization problems and other cognitive and social deficits of students with autism.

The Location Of Educational Settings

Historically, when children with autism were excluded from public schools, their parents joined other advocates to provide direct educational services and to work politically to obtain these services at public expense. The result of the first objective was that most programs for these children were private and, therefore, located in settings which were likely to be isolated from other, non-handicapped students. When the political efforts of the parents helped in the passage of legislation requiring that all children be educated at public expense, many parents were so accustomed to segregated educational service delivery models that they did not question when their child was placed in an "autism class" in the segregated handicapped-only school.

Programmatically, the position offered here is that there is not now, nor has there ever been, any inherent value in isolating this or any other population of students with handicaps. Isolation occurs for reasons other than the educational

and social needs of students. According to O'Brien (1979), separate facilities for the handicapped can serve a political purpose in identifying what the district is doing "for" these individuals, thus impressing parents, legislators, and the citizenry in ways that can lead to approval of dollar appropriations. Isolation of handicapped people can also be done in the name of convenience, allowing professionals to centralize special services in the mistaken belief that it is more convenient for adults to move children. Isolation can also suit administrative purposes, in the sense that it may be easier to monitor one or two places that are responsible for special children than to monitor the education of these children all over town. Isolation may also continue to seem appropriate to those who continue to rely on yesterday's solutions because they are slow to change.

For handicapped students to be automatically segregated is stigmatizing, an impediment to their ability to function in desegregated environments, and a violation of their civil rights under the "least restrictive alternative" provision of PL 93-312, Section 504 (Martin, 1979). More specifically, there is substantial data and experience to indicate that students with autism have socialization deficits and have some difficulty generalizing from "treatment" to "non-treatment environments." If the criterion for choosing a setting is the development of a program which will maximize the possibilitythat the children served will be able to live their lives as members of the public community, then the preparatory experiences, including the location of services, should approximate characteristics of that community as much as possible. There is no programmatic rationale for a segregated environment or for homogeneous grouping. Unfortunately, for the moment the homogeneous grouping of five or six or more students with autism may be necessary because of the limited numbers of trained staff. However, alternative solutions must be designed and implemented immediately. Although there are no data indicating that students with autism are likely to learn normalized social relationships from each other, there is a great deal of evidence from parents that siblings and friends often do relate to and develop affectionate relationships with these children.

Although homogeneous grouping may be temporarily necessary, there is no acceptable rationale for segregated environments. Classes for students with autism ought to be in the same educational facilities as those of their non-handicapped chronological age peers. It is both stigmatizing and inappropriate to place a class of adolescents with autism down the hall with the normal kindergarten. If students with autism are to learn to act appropriately, they must have access to people and environments that demand appropriate behavior.

Similarly, if future citizens are to be more tolerant of the unusual behavior these children often exhibit, they need to learn early and often that what is unusual need not be frightening and probably is not dangerous. The normal schoolmates of

these students have a good chance of becoming substantially handicapped themselves (Brattgard, 1977), or of becoming the parents of severely handicapped children. Certainly they have the right to learn about citizens who might look or behave differently. The Constitution does not demand that people like one another, but it does require that they tolerate one another (Galloway, 1979).

Some would argue that the success of many fine private programs for students with autism justifies their education in isolated settings. The counter is, of course, that private programs for children with handicaps have typically rated their success on their ability to return a percentage of their students to less restrictive environments. Moreover, the issue is not private vs. public; it is the elimination of the automatic, arbitrary, unnecessary, and counterproductive segregation of these students. There is every reason to believe that, if the skills, technology, and experience of these private programs were available in chronological age-appropriate, desegregated school settings, the success rate and the lives of these students would be enhanced. Past models and solutions clearly are not sufficient if educators are to make the difference, ultimately, in the life space of these students. Perhaps seemingly radical solutions must be tried. At least one major non-public school program for children with autism, Division TEAACH out of the University of North Carolina, described in the chapter by Olley (1980), has been successful in operating many classrooms for these students in regular public school buildings. The governance, funding, policy issues, and so on, are of course unusual, but the needs of this population as well as the problems of declining resources and enrollment which face the larger educational community today may argue for many more radical, flexible, and unusual solutions.

IMPLICATIONS FOR PERSONNEL PREPARATION

Status Of Personnel Preparation

Generally, personnel preparation in the field of autism has been inadequate. Depending upon the area of the country, training programs are wither nonexistent or inappropriate. The absence of training programs is attributable to the fact that, since students with autism were for so long excluded from public schools, there was no reason for personnel preparation programs to deal in depth with the educational programs of autism. A study conducted by Smith (1977) found that there were very few preservice or inservice training programs which prepare teachers in the area of autism. Recently, legal mandates requiring states to educate all children have caused teacher training programs to begin to deal with the needs of autistic children. Many of these emerging programs, however, fail to prepare teachers with the skills necessary to work with autistic children and youth. One reason for this may be the fact that autism is a low-incidence disability and usually subsumed by a larger

category in most training programs. Frequently, autism is erroneously viewed as an emotional disturbance, and potential teachers of students with autism are prepared in the same manner as potential teachers of students who are emotionally disturbed. Such a course of training is not likely to equip teachers with the skills necessary to manage stereotypic or self-destructive behavior, to build communication, or to teach basic social interaction skills.

Presently, most teachers of students with autism receive their training in emotional disturbance, learning disabilities, behavior disorders, or some other category in which the student population is more mildly impaired than are autistic students. Smith (1979) found that the majority of teachers she surveyed did not feel adequately prepared to work with the autistic students who were in their classes. Such an unfortunate finding is understandable for a number of reasons.

First, it is not appropriate to train teachers of autistic classes as part of a teacher training program in emotional disturbance because the target children are not emotionally disturbed. Instead, they have severe, organically based cognitive and linguistic deficits, which are present at or shortly after birth and which are likely to last throughout life (Ritvo & Freeman, 1977; Warren, 1980). The educational needs of children with autism have little in common with most of the other students who are labeled emotionally disturbed. Although many "intellectually normal" students with autism share many characteristics and academic needs with mildly impaired populations and often may be appropriately placed in classes for the mildly handicapped, their needs remain more comprehensive and extend beyond the classroom setting.

Second, although students with autism are likely to exhibit many bizarre and even dangerous behaviors, placing primary emphasis upon these behavior disorders does not relate to critical comprehensive habilitative needs. Teachers must also know how to deal with the cognitive, communication, social, vocational, community functioning, and other needs which are usually quite different from the needs of other students who, for example, may be referred out of their regular classrooms primarily because of "acting out" behavior.

Since teacher certification is closely linked to the way the public officials categorize children, it will be necessary to remove autism from the emotional disturbance, learning handicapped, or other inappropriate category in which it is presently found in federal and state regulations in order to impact significantly on training. The question of whether autism should be a separate category or be part of a broader category, but one which more adequately reflects the needs of these students, is an important one (Warren, 1980) with wide-ranging political and educational consequences.

The concern here is that teacher trainers may not generalize from this circumscribed information to the more comprehensive needs of teachers. If one views teacher training in terms of the ultimate functioning of students, it is apparent that teachers need to learn the processes for identifying, assessing, promoting, monitoring, and evaluating comprehensive and longitudinal goals that each of their students must possess now, and in the future, in order to succeed in a heterogeneous post-school society. Taking such an approach, competencies such as those referred to above can help generate clusters of competencies which more adequately reflect the longitudinal and comprehensive needs of teachers and their students with autism.

Teachers who work with students with autism and other severely handicapping conditions should possess at least the following competencies:

1. The ability to assess and document across a variety of activities and settings the student's learning strategies, performance, rate, and degree of generalization and stimulus control difficulties;

2. The ability to assess the particular language characteristics and communicative needs of an individual student and to develop appropriate programs which incorporate systematic language and communication development as part of all curriculum domains and instructional activities;

3. The ability to inventory a variety of current and future environments selected in consultation with parents and/or guardians, in order to identify important activities performed by non-handicapped persons;

4. The ability to identify and incorporate the natural cues and correction procedures on which non-handicapped persons rely;

5. The ability to inventory and analyze the skills necessary for a given student to perform in a wide variety of natural environments;

6. The ability to choose and prioritize, in consultation with parents or guardians, a variety of instructional activities which will enhance the ability of each student to perform effectively in the natural environments delineated;

7. The ability to coordinate the unique needs of all of the students in the class so that the class can function as a whole, yet meet the needs of each student;

8. The ability to use a variety of instructional strategies to effect student learning;

9. The ability to use a range of appropriate behavioral management strategies with due consideration given to the legal, ethical, and administrative issues involved, as well as to the natural environments in which the strategies might have to be implemented;

10. The ability to monitor student progress and to make program decisions based on data collected in a variety of school and non-school environments;

11. The ability to select clusters of activities so that the individual student can use what is learned in one activity or environment to enhance his learning in another.

Where Should Teachers Of Autistic Students Be Trained?

It is often argued that teachers of students with autism should be trained in the schools and communities as close as possible to those in which they will work because it is into those schools and communities they will be integrating and training their students. For example, it seems appropriate to inservice each teacher with his or her own students, student teacher aides, administrators, and ancillary staff. However, as there are so few teacher training programs and such a great need on both preservice and inservice levels, such a strategy seems impossible.

In preservice training, the experience of the classroom itself has tremendous influence on student teacher behavior, even to the point of shaping student teachers in ways that are not in keeping with what they are learning in university lecture halls (Iannoccone & Button, 1964; Copeland, 1979). This, coupled with the fact that student teachers need the opportunity to practice what they are learning with actual children, suggests that inservice and preservice training needs cannot be clearly separated. The Rand report on federal support for educational change (Berman, 1973-1978) suggests that long-lasting change in educational programming is highly dependent upon local school conditions. Packaged materials and dependence on external consultants to change teacher behavior do not result in enduring change unless the change is adapted to local needs. A study of California's early childhood program (Baker, 1976) similarly concluded that state programming policy would receive only lip service attention unless the people on site were willing to adopt the policy and unless the innovations met local needs and conditions. "Hands on" training has been shown to be highly successful when teaching teachers, aides, speech and language specialists, administrators, and other school personnel the technology necessary to work effectively with autistic students (Koegel, Russo, & Rincover, 1977; Donnellan-Walsh & Schuler, 1977). In addition, the skills necessary to train others in this technology can be taught to many naive persons. Part of the success of these projects was their adaptability to local needs.

It should be obvious that teachers who will be working with students having the problem of autism must have at their command most of the same competencies as those needed by teachers of other severely handicapped students since students with autism share a need for long-range, comprehensive, functional education in natural environments. Of course, the educational needs of students with autism and students with other severe handicaps are not totally congruent. For example, teachers of students with autism will probably not have to deal with many of the physical handicaps that are frequent among the severely handicapped. Similarly, teachers of physically or multi-handicapped students will seldom encounter the ritualistic compulsions, unusual learning styles, bizarre behaviors, or unusual language characteristics which are so often found in autism. Nevertheless, the field of the severely handicapped provides some delineation of the competencies needed to work successfully with autistic populations.

What Should We Teach Teachers Who Will Work With Students With Autism?

Many leaders in the field of education for severely handicapped students have identified teacher competencies that are necessary for working with students with autism. For example, Haring (1975) cites six minimum skills essential for teachers of the severely handicapped:

1. The ability to task analyze and sequence the instructional curriculum with prerequisite, intermediate and terminal behaviors specified for each skill;

2. The ability to record and evaluate student progress on a daily basis;

3. The ability to select, purchase and construct and/or design special instructional materials;

4. The ability to teach and maintain attention and responses using reinforcement contingencies;

5. The ability to work with parents; and

6. the ability to function as a member of an interdisciplinary team.

According to Smith (1979), with minor variations, similar competencies or competency lists were suggested or developed by Allen, 1976; Perske and Smith, 1977; Scheuerman, 1976; Sontag, Burke and York, 1976; Stainback, Stainback and Maurer, 1976; and Wilcox, 1977. These lists of teacher competencies, while usually excellent, tend to reflect a clinical or "target skill" approach to teaching. Hopefully, many educators will take them and incorporate them into the broad range of skills necessary for teaching students in school and non-school environments.

It is reasonable to assume that such a hands-on and locally adapted model could be expanded to include a wide variety of the processes and skills teachers need to acquire to meet the comprehensive needs of students with autism. Using a field-based training approach, we could then identify persons and programs that are on the cutting edge of the education of students with autism and other severe handicaps and with them develop regional training institutes. The purpose of the regional institutes would be to train university level personnel who are doing preservice training of teachers as well as state department of education personnel who are responsible for identifying and disseminating "promising new practices" in the field of education. These trainees would then be responsible for inservice and preservice training on the local level through State Departments of Education and local universities.

In order for this or any approach to be successful, care would have to be taken to ensure that any one approach is not seen as "the model" or training package but one that teaches school personnel how to utilize processes and techniques which have been identified as successful with other autistic and severely handicapped students, and to adapt them to the individual and unique needs of the students in their local programs.

SUMMARY

This paper has reviewed education practices presently found in classrooms for students with autism. It is apparent that changes, including the development of more functional curricula; the location of classes in chronological age-appropriate, integrated settings; the use of age-appropriate and functional materials and naturally occurring cues and prompts; the expansion of classroom boundaries to include natural environments; and a rethinking of approaches to personnel preparation are necessary if society is to reverse the statistics which show that adults with autism are almost invariably condemned to lives in segregated institutions.

The efforts of educators alone will not be sufficient to effect such wide-scale change. Real differences will not be felt until all who consider themselves advocates begin to challenge the political and economic realities which currently thwart and splinter efforts to make community living alternatives available for all of our citizens (see MacCoy, 1980). Educators have often abdicated their responsibility and, as a result, given credence to those who claim that students with autism cannot be taught to participate in society in any meaningful way. They must now accept responsibility to develop educational approaches which emphasize longitudinal, comprehensive functional educational programming and which utilize the best of what research has to offer. The scientific community must also be convinced that it is now time to move more research into natural settings. The task is difficult, but essential, if the vicious cycle of isolation, rejection, and wasted human potential is to be ended.

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